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SAMA PATENTS

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A tomato composition obtained from tomato juice having the following composition in percentage by weight:

- 100% being the sum of the two components,  
wherein the amount of insoluble solids in the dry residue ranges in percentage by weight from 18% to 70%.

Description of the industrial invention in the name of:

Romeo Aurelio, of Italian nationality, residing in Via Gatteschi 10, Roma.

\* \* \* \* \*

The present invention relates to novel tomato products having an improved seasoning power in particular on pasta.

Tomato products, which are prepared from the tomato juice obtained by fruit trituration, seed and peel separation, are known in the prior art. The tomato juice is an aqueous suspension of insoluble solids in an aqueous solution wherein organic and inorganic substances are dissolved.

From the obtained juice other products such as pulped tomatoes and tomato purees can be obtained. Pulped tomatoes in general are obtained from juices by partial concentration. The tomato purees are obtained by harder concentration processes. The methods generally suggested are the reverse osmosis, cryoconcentration and concentration by evaporation. By using the reverse osmosis it is necessary to operate, instead of at cold, at temperatures of about 70°C to have a satisfactory concentration yield; furthermore it is necessary to clean and regenerate the membranes, using chemical detergents, which must then be removed. Indeed if present in traces they can pollute the tomato product. See C.S. Leoni "I derivati industriali del pomodoro", experimental Station for the food

preserves industry in Parma, October 1993, pages 92-93. The cryoconcentration is inapplicable to the tomato juice due to the high percentage of solids in suspension, which would be separated together with the ice. See page 93 of the previous quotation.

In practice the concentration by evaporation remains the preferred alternative to concentrate the tomato juice. See page 93 of the previous quotation. The concentration by evaporation implies the juice heating; the heating duration and the maximum temperature reached from the juice during the concentration lead to organoleptic and nutritional variations of the product. The organoleptic variations concern a caramel taste and a typical cooking ("cotto") aroma present in tomato purees and they are to be mainly attributed to the formation, during the juice concentration, of hydrogen sulphide, dimethylsulphide, furfural, 3-methylmercaptopropanal, 2,4-heptadienal, acetaldehyde, phenylacetaldehyde. See S. Porretta "Il controllo della qualità dei derivati del pomodoro", experimental Station for the food preserves industry in Parma (1991), page 51; S.J. Kazeniac et al., J. Food Sci. 35 519 (1970).

The nutritional variations mainly relate to the degradation of the carotenoids present in the tomato and in particular the lycopene. The tomato as such and its products have a

high nutritional power deriving from the vitaminic components, and mainly from the present carotenoids. It has been demonstrated that the tomato product consumption is associated to a risk decrease of some cancer types (prostata, pancreas, stomach). See H. Gerster, J. Am. Coll. Nutr. 1997, 16, 109-126; S.K. Clinton Nutr. Rev. 1998 56 35-51. The previously described beneficial nutritional effects are to be ascribed to the carotenoids contained in the tomato and in particular to lycopene. Recently it has been shown that during the concentration by evaporation of the tomato juice there is a degradation of carotenoids and in particular of lycopene. See R. Gary et al., J. Agric. Food Chem. 2001 49 3713-3717.

The tomato purees are commercially known as preseves, which are diluted before the use. The commercial tomato purees, for example in Italy, are classified as follows:

- |   |                    |      |     |                            |
|---|--------------------|------|-----|----------------------------|
| - | semiconcentrate    |      |     | dry residue 12% by weight; |
| - | concentrate        | (C)  | " " | 18% " ;                    |
| - | double concentrate | (DC) | " " | 28% " ;                    |
| - | triple concentrate | (TC) | " " | 36% " .                    |

Generally the concentrated products are diluted before and during the use. The seasoning power of the triple concentrate (TC) as such, before dilution, is higher than that of the other commercial tomato products, concentrates comprised. With seasoning power it is meant the product

capability to adhere to the foods, in particular to the pasta. However, as said, said concentrated products must be diluted before or during the use because of their too strong taste. Consequently the advantage of the higher seasoning power of said products is lost. Generally all the commercial purées over 12% of dry residue show this taste problem and therefore they must be diluted.

If a semiconcentrate at 12% is used, which generally is not to be diluted before the use since it has no problems of unpleasant taste, the seasoning power is very low, quite lower than the TC as such. The pulped tomatoes are used as a ready base for the rapid condiment preparation. Generally the dry residue in pulped tomatoes, which can be determined as described afterwards, is lower than or equal to 10% by weight, generally 8%-10% by weight.

The Applicant has surprisingly and unexpectedly found tomato products which do not need either dilution or concentration, which can be used as such and which have an improved seasoning power, improved organoleptic properties, i.e. without caramel taste, without bitter taste, without cooking ("cotto") aroma and besides they have no sour taste.

An object of the invention is a composition or a tomato product obtained from tomato juice having the following composition in percentage by weight:

- |   |             |           |
|---|-------------|-----------|
| - | dry residue | 8 - 20%,  |
| - | water       | 92 - 80%, |

100% being the sum of the two components,

wherein the amount of insoluble solids in the dry residue (total solids) ranges in percentage by weight from 18% to 70%, preferably 20%-50%, still more preferably from 30% to 50%.

The total dry residue, the soluble solids and the insoluble solids are determined as described in the Examples.

The tomato products of the invention are obtainable by the process described below which, differently from the products of the prior art, includes a hard separation of the tomato serum from the insoluble solids, obtaining tomato products according to the invention, having an insoluble solid content in the dry residue even up to 70%.

To the invention tomato products it is possible to add lyophilized or cryoconcentrated serum to further improve the taste. It is thus possible to obtain, for example, tomato products having a lower content of insoluble solids in the dry residue.

Therefore in the invention tomato products it is possible to adjust the ratio between the insoluble solids and those soluble. The Applicant has found that by varying the amount of soluble solids present in the total solids, the taste properties of the product (more or less intense taste), can be

suitably dosed, while from the amount of insoluble solids present in the total solids mainly depend the olfactory properties of the product (fresh tomato smell) since the insoluble solids retain the volatile components.

Furthermore the Applicant has found that the invention tomato products unexpectedly englobe, for example, by mechanical mixing, without serum separation, animal and vegetable fats, solid at room temperature, such for example butter or margarine, and/or fats liquid at room temperature as for example vegetable oils, for example olive oil, and/or cheeses having soft- or fresh-grain or hard-grain and grated.

Preferably to carry out said englobing an invention tomato product is used, having an insoluble product content in the dry residue from 30% to 70% by weight, preferably from 35% to 70% by weight.

The amount of fats and/or oil which can be englobed in the composition ranges from 10 to 25% by weight referred to the weight of the starting tomato product; the amount of soft-grain cheeses which can be englobed can be any amount, since the two components are perfectly miscible in all ratios; the amounts of soft-grain cheese which can be englobed are for example from 50% to 300% by weight, said percentage calculated as above mentioned.

When food fats solid at room temperature are used, it is



preferable to heat said fats, before mixing with tomato oil, at least up to the softening point of said fats, preferably not over their melting point.

The amount of hard-grain and grated cheeses which can be englobed ranges from 10 to 25%. Said compositions can be used as complete condiment since they englobe, as said above, in particular oil, butter and/or cheeses. To said compositions other usual ingredients of products for food use, such for example essence aromas, preservatives, etc, can be added.

As said, the invention tomato products and the compositions obtained therefrom as above defined have an improved seasoning power and improved organoleptic and nutritional properties in comparison with the products on the market.

The invention products, in particular those obtainable by mixing the invention tomato products with fats and/or oils and/or cheeses, can also be used as foods. For example said products can be consumed spread on bread, as soft cheeses.

Said seasoning power is combined with improved organoleptic properties, i.e. without caramel taste, without being bitter, sour. Said organoleptic properties are completely absent in the commercial products showing a good seasoning power. See the comparative Examples on the commercial products TC, DC and C.

The Applicant has found that the amount of insoluble so-

lids which must be present in the tomato product to confer an improved seasoning power must be at least 18% with respect to the dry residue of the tomato product, preferably from 20% to 50%.

As foods to be seasoned, pasta, meat, fish, vegetables, etc., can be mentioned.

The test to determine the seasoning power is described in the Examples.

The invention products show a high content of insoluble solids. The Applicant has found that the amount of insoluble solids in the commercial products is not higher than 15% in the dry residue. For example in the fresh pulp the amount of insoluble solids is generally about 12.5% of the total tomato solids (dry residue). See in "Tomato paste, Purée, Juice & Powder" P. G. Goose, Food Trade Press Ltd 1964.

The process to obtain the invention tomato products can be performed for example in a grid separator, equipped with a feeding filler, and one or more walls of the separator constituted by stainless steel grids for food use, having an opening not greater than 0.5 mm, preferably from 0.05 mm to 0.3 mm. The grid length is not critical. For example the length can range from 30 cm to 2 meters, depending on the volume of the tomato juice to be treated.

Preferably in said separator the bottom is constituted by

a grid, having the above mentioned features.

The separator is furthermore equipped with a device for mechanical stirring which must be very low, generally from 5 rpm to 20 rpm, the device being of a shape such that the solid is conveyed in the separator central zone. It has been found that stirring prevents the solid from adhering and accumulating on the walls, so that no clogging occurs in the separator during the processing.

According to the present invention process the separator is charged with the tomato juice, obtained by tomato fruit trituration and seed and peel separation previously treated according to known processes, for example by "hot break", "cold break" processes, or by applying high pressures, for example of the order of 500-3,000 Atm (50.5 MPa -  $3.03 \times 10^2$  MPa), to inactivate enzymes.

The invention process is carried out in the presence of stirring as indicated above, under sterile conditions, operating at temperatures generally in the range 5°C-15°C and at atmospheric pressure, or using pressures slightly higher than that atmospheric, from 760 mm Hg (0.101 MPa) up to 900 mm Hg (0.120 MPa) or by applying pressures slightly lower than the atmospheric pressure, down to 450 mm Hg (0.06 MPa).

The process ends when in the separator there is a compact mass which does not separate any longer tomato juice serum.

By operating with the separation process according to the present invention carotenoids, lycopene comprised, and the other liposoluble vitaminic components remain in the mass which separated from the liquid part or tomato serum.

Unexpectedly with the invention process there is no clogging of the grid separators having opening having the above indicated sizes since unexpectedly and surprisingly a compact mass is formed, as said above. Said result is unexpected since one would expect the formation of a product layer adhering to the grids, substantially impermeable, and therefore the consequent grid clogging.

Said mass, formed during the invention process, is compact and does not adhere to the walls whereby it is easily recovered from the separator. The invention process has a very high productivity since there is no product clogging on the grids with consequent process downtime for the separator cleaning.

The tomato juice serum percolated from the separator grids, containing a large part of the soluble solids of tomato juice, is generally recovered by lyophilization or cold concentration with known methods, for example the cryoconcentration.

Another method used to obtain the invention tomato products is that to use a concave- or flat-shaped sieve, having

meshes with opening not greater than 0.5 mm, for example from 0.05 to 0.3 mm, wherein is transferred the tomato juice obtained as above indicated. The mass is kept under oscillation, or vibration until a compact mass, as above said, forms, which does not separate any longer the serum.

The compact mass is easily recovered since it does not adhere to the sieve.

A further process used to obtain the invention tomato products consists in passing the tomato juice, treated as above indicated, through an equipment constituted by a stainless steel for food use grid cylinder, having an opening not greater than 0.5 mm, preferably from 0.05 mm to 0.3 mm, said cylinder having inside an Archimedean screw rotating at an angular speed of 20-40 rpm. The process is preferably carried out under the temperature and pressure conditions above described for the process in which the separator is used.

Preferably the cylinder is in horizontal position, and has a diameter which can for example range from 30 cm and 1 meter, length from 5 meters to 2 meters. Preferably the Archimedean screw is coaxial with the cylinder axis.

The juice is let pass in the cylinder, even more times, until a compact mass is formed and there is no separation of tomato serum any longer.

The serum is recovered as above indicated.

As said, the separated serum contains a great part of the soluble solids contained in the tomato juice. The Applicant has found that to modify the organoleptic properties (taste) of the invention tomato products it is necessary to add soluble solids by addition of said lyophilized or concentrated serum. Generally the serum is cold concentrated by cryo-concentration.

With the above described processes tomato products are obtained according to the invention having a content of insoluble solids in the dry residue even up to 70%.

Generally, with the invention process tomato products are obtained according to the invention having a content of insoluble solids in the dry residue in the range 40-70%. To said tomato products it is possible to add lyophilized, or cryoconcentrated serum, to further improve the taste. It is thus possible to obtain, for example, tomato products having a lower content of insoluble solids in the dry residue, generally comprised between 18 and 40%.

The tomato products according to the present invention allow to maintain the organoleptic and nutritional properties of the fresh tomato. Therefore in the present invention products there are no variations of the organoleptic properties, such for example in the tomato products of the prior art

wherein it is noticeable the caramel taste and/or a cooking ("cotto") smell.

Also the nutritional properties remain unaltered, since there is no alteration of the carotenoids, in particular of the lycopene, as it occurs in the commercial products.

The following not limiting Examples illustrate the invention.

#### EXAMPLES

##### Characterization methods

##### Determination of the seasoning power of a tomato product according to the invention

- Materials:
  - tomato product to be tested,
  - vegetable oil, preferably olive oil,
  - full length, not broken spaghetti No. 12 De Cecco trade mark with cooking time indicated by the manufacturer 12 minutes,
  - kitchen salt.

90 g of tomato product to be tested and 10 g of vegetable oil (condiment total weight: 100 g) are introduced into a vessel, preferably a plastic vessel, previously weighed and having 1 liter capacity.

70 g of spaghetti are cooked apart, in 1 liter of water containing 5 g of kitchen salt, for the time indicated on the

package. At the end the cooked spaghetti are strained until no water drops form any longer.

The cooked spaghetti are added to the condiment previously prepared in the plastic vessel and by a fork they are carefully mixed slowly for 5 minutes. The vessel is then put on a boiling water bain-marie for 5 minutes, without mixing spaghetti. From the vessel with a fork the spaghetti are taken 2-3 at a time and without shaking them, it is let fall in the vessel the condiment which tends to immediately detach.

In the plastic vessel it remains the condiment which has not adhered to the spaghetti. Lastly the plastic vessel is weighed and in this way it is determined the condiment weight which has not adhered to the pasta. The difference to 100 (initial condiment weight) gives the amount which has remained attached to the pasta ( $Q_A$ ).

The seasoning power is defined on the basis of the following equation:

$$\text{Seasoning power} = \frac{Q_A \times 10}{100}$$

#### Determination of the dry residue: total solids

The total dry residue is determined in the tomato juice using a vacuum stove (vacuum not higher than 450 mm Hg - 59.85 KPa) at 70°C. The method is as described in the above mentioned ref. by S. Porretta, page 106.



#### Determination of soluble solids

The determination of soluble solids has been carried out using an Abbe refractometer (Brix degrees), with the method based on the above reported ref. by S. Porretta, page 101.

#### Determination of insoluble solids

The determination of insoluble solids has been carried out by calculating the weight difference between the dry residue and that of the soluble solids (Brix value).

#### Determination of the rheometric properties

In a Dynamic stress Rheometer SR-200 (Rheometric Scientific) the shear stress (Pa) with respect to the speed gradient ( $s^{-1}$ ) has been measured.

#### EXAMPLE 1

##### Preparation of a tomato product (Ro2 code)

The processing is carried out under sterile conditions.

10 Kg of tomato juice (free from seeds and peels), previously hot break to inactivate enzymes, are portionwise transferred in a 10 litre separator equipped with stirrer. The separator is constituted by stainless steel grids having an opening of 0.1 mm. The stirring in the separator is such that the solid is conveyed towards the central zone. The stirring (8 rpm) is started and it is operated at a temperature in the range 5°C-10°C.

After 3 hours stirring speed is reduced to 3 rpm. It is

noticed that the mass in the separator has become compact and homogeneous. After 15 hours from the process beginning, no serum is any longer separated from the mass in the separator. Stirring is interrupted and the obtained product is discharged. 2.7 kg of tomato product Ro2 are recovered.

The product analytical properties are the following:

- dry residue: 10% by weight;
- water: 90%;
- insoluble solids: 50% by weight with respect to the dry residue.

The rheological properties of the product Ro1 have been measured in comparison with the following commercial products: triple concentrate (TC), double concentrate (DC), concentrate (C), pulped tomatoes.

The shear stress/speed gradient ( $s^{-1}$ ) trend is reported in the following figures and the respective data in the Tables as indicated hereinunder:

- Ro2, TC: Fig. 1 and Tables 1 (Ro2) and 3 (TC);
- TC, DC: Fig. 2 and Tables 4 (DC) and 3 (TC);
- TC, C: Fig. 3 and Tables 5 (C) and 3 (TC);
- pulped tomatoes: Fig. 4 and Table 6.

The Figures show that Ro2 has rheological properties that overlap to those of TC and are superior to those, respectively, of DC, C and pulped tomatoes.

EXAMPLE 2

Preparation of a tomato product (Ro1) wherein to the product Ro2 lyophilized tomato serum is added

980 g of the product Ro2, to which 20 g of lyophilized tomato serum are added, are transferred into a vessel equipped with stirrer, in a sterile environment. It is stirred at 8 rpm at a temperature in the range 5°C-10°C, until a homogeneous mass is obtained (product Ro1).

By the analysis it is found that Ro2 has a dry residue of 11.8% by weight, and that the insoluble solids are 41.5% of the dry residue.

The rheological properties (shear stress/speed gradient ( $s^{-1}$ ) trend) of the product Ro1 have been measured and compared with the same commercial products used for obtaining Ro2.

The Ro1 trend is reported in Fig. 1 and the data with which the rheogram has been plotted are reported in Table 2.

It can be repeated the same conclusions above mentioned for Ro2.

EXAMPLE 3

Preparation of compositions of the invention tomato products with vegetable oil

A composition of tomato product Ro1 and olive oil was prepared. In a vessel, under stirring at 200 rpm, olive oil was slowly added, at small portions, to the product Ro1,

leaving the mass under stirring for 5 minutes. The englobed oil amount is 15% by weight. The product was recovered and let stand one month at +4°C, in a closed vessel, without showing substantial oil separation.

#### EXAMPLE 4

##### Preparation of compositions of the invention tomato products with vegetable oil

The Example 3 was repeated but adding all at once, slowly, to Ro1 an oil amount equal to 15% by weight with respect to the Ro1 weight. After leaving the mass under stirring for further 5 minutes from the end of the addition, the product was recovered. The same results of the Example 3 are obtained.

#### EXAMPLE 5

##### Preparation of composition of the invention tomato product Ro2 with food fat solid at room temperature

The Example 3 was repeated but using a solid fat (butter), previously heated at 40°C and then mixed with the tomato product Ro2 for 5 minutes (200 rpm) after the butter addition. The total added butter corresponds to 20% by weight of Ro1. After cooling a solid mass was obtained, from which serum does not separate, even after 20 days of storage in refrigerator at 5°C.

EXAMPLE 6Preparation of a composition of the invention tomato products  
Ro1 with food fat solid at room temperature

Example 5 was repeated but adding a total amount of butter of 300% by weight with respect to the tomato product Ro1, leaving then under stirring (200 rpm) for 15 minutes after the addition to homogenize the mass. After cooling a solid mass was obtained, from which serum does not separate, even after 40 days of storage in a refrigerator at 5°C.

EXAMPLE 7Preparation of a composition of Ro1 with soft-grain cheese

In a vessel, under stirring (200 rpm), to the product Ro1 different amounts of Philadelphia® Light cheese have been added. It has been found that this soft cheese is miscible in all the ratios with the product Ro1. In particular compositions having the following weight ratios Ro1/cheese: 50/50, 75/25, 25/75 have been prepared.

EXAMPLE 8Preparation of a composition of Ro2 with hard-grain, grated  
cheese and a food fat solid at room temperature

In a vessel, under stirring (200 rpm), to 30 g of tomato product Ro2, 30 g of butter heated to 40°C and 30 g of grated Parmesan cheese have been added. After 15 minutes the mass becomes homogeneous. At this point it is cooled to room tempera-

ture. A solid mass is obtained from which serum does not separate, even after 20 days of storage in a refrigerator at the temperature of 5°C.

#### EXAMPLE 9

##### Preparation of a composition of Ro1 with soft-grain cheese

In a vessel, under stirring (200 rpm), to the product Ro1 different amounts of Jocca® cheese have been added. It has been found that this soft cheese is miscible in all ratios, as that used in the Example 7, with the product Ro1. Compositions having the same weight ratios Ro1/cheese as those of the Example 7: 50/50, 75/25, 25/75, have been prepared.

#### EXAMPLE 10

##### Evaluation of the seasoning power of the invention tomato products in comparison with commercial products

The method indicated in the characterization methods for the determination of the seasoning power has been used, for the invention products Ro1 and Ro2 and the comparative commercial products triple tomato concentrate (TC), double concentrate (DC), concentrate (C) and pulped tomatoes.

The results are reported in Table 7. The data show that Ro2 shows the best combination of seasoning power and of organoleptic properties (taste). In any case the invention products show an improved seasoning power combined with improved organoleptic properties with respect to the commercial tomato

products.

TABLE 1

RO 2 test 1

Stress Pa	Ela Pa-s	Rale s-1	Torque N-m	time s	Temp °C	Strain(t) %	SS Time s	SS Slope	theta rad	G' Pa	G'' Pa	Position	stress(t) Pa
20.9989	1.46E+05	2.05E-04	5.03E-04	0	21.8	2.20E-01	30.0001	0.33456	9.22E-05	13184.1	0.00E+00	7	20.9989
33.6594	1.39E+06	2.42E-05	5.64E-04	29	21.8	4.14E-02	30.0001	0.03283	1.68E-05	81360.2	0.00E+00	7	33.6594
37.7664	DIV0	0	6.33E-04	59	21.8	0.00E+00	30.0001	0	0		0.00E+00	7	37.7664
42.3746	1.24E+06	3.41E-05	7.10E-04	89	21.8	6.21E-02	30.0001	0.04133	2.51E-05	68284.3	0.00E+00	7	42.3746
47.5451	1.43E+06	3.33E-05	7.97E-04	120	21.8	5.17E-02	30.0001	0.04017	2.09E-05	91939.5	0.00E+00	7	47.5451
53.3465	1.28E+06	4.18E-05	8.94E-04	150	21.8	6.21E-02	30.0001	0.0527	2.51E-05	85964.9	0.00E+00	7	53.3465
59.8557	1.28E+06	4.69E-05	0.001	180	21.8	6.21E-02	30.0001	0.05369	2.51E-05	96454.2	0.00E+00	7	59.8557
67.1592	1.02E+06	6.55E-05	0.00113	210	21.8	7.24E-02	30.0001	0.08091	2.93E-05	92762.9	0.00E+00	7	67.1592
75.3539	1.98E+06	3.80E-05	0.00126	240	21.8	1.14E-01	30.0001	0.0806	4.61E-05	66233.8	0.00E+00	7	75.3539
84.5485	1.88E+06	4.49E-05	0.00142	271	21.8	1.03E-01	30.0001	0.07438	4.19E-05	81747.1	0.00E+00	7	84.5485
94.865	2.26E+06	4.20E-05	0.00159	301	21.8	1.45E-01	30.0001	0.00772	5.86E-05	65515.5	0.00E+00	7	94.865
106.44	2.25E+06	4.73E-05	0.00178	331	21.8	1.97E-01	30.0001	0.01428	7.96E-05	54165	0.00E+00	7	106.44
119.428	2.40E+06	4.98E-05	0.002	360	21.8	2.30E-01	30.0001	0.01102	9.63E-05	50204.7	0.00E+00	7	119.428
134	2.23E+06	6.07E-05	0.00225	390	21.8	3.00E-01	30.0001	0.00914	1.21E-04	44676	0.00E+00	7	134
150.351	1.81E+06	8.33E-05	0.00252	421	21.8	4.03E-01	30.0001	0.01243	1.63E-04	37274.1	0.00E+00	7	150.351
168.696	1.55E+06	1.09E-04	0.00283	451	21.8	5.79E-01	30.0001	0.01197	2.35E-04	29126.2	0.00E+00	7	168.696
189.28	1.04E+06	1.83E-04	0.00317	481	21.8	9.31E-01	30.0001	0.04483	3.77E-04	20334.3	0.00E+00	7	189.28
212.376	6.37E+05	3.34E-04	0.00356	511	21.8	1.83E+00	30.0001	0.021	7.41E-04	11601.1	0.00E+00	7	212.376
230.29	1.97E+05	0.00121	0.00399	541	21.8	5.32E+00	30.0001	0.06057	0.00215	4482.39	0.00E+00	7	230.29
267.366	4825.91	0.0554	0.00448	572	21.8	9.29E+01	30.0001	0.02181	0.03764	287.677	0.00E+00	7	267.366
299.989	1019.57	0.29423	0.00503	602	21.8	6.64E+02	30.0001	0.00387	0.26874	45.21	0.00E+00	5	299.989
336.593	451.736	0.74511	0.00564	632	21.8	1.84E+03	30.0001	0.00274	0.74575	18.2796	0.00E+00	48	336.593
377.66	182.359	2.07097	0.00633	662	21.8	4.65E+03	30.0001	0.0078	1.88457	8.11606	0.00E+00	33	377.66



TABLE 2

RO 1 test.1

Stress Pa	Ela Pa-s	Rate s-1	Torque N-m	time s	Temp °C	Strain(%)	SS Time s	SS Slope	theta rad	G' Pa	G'' Pa	Position	stress(I) Pa
29.9989	1.78E+05	1.69E-04	5.03E-04	0	21.8	2.28E-01	30.0001	0.32238	9.22E-05	13184.1	0.00E+00	1.06E-38	29.9989
33.6594	DIV0	0	5.64E-04	29	21.8	0.00E+00	30.0001	0	0	0	0.00E+00	1.05E-38	33.6594
37.7664	DIV0	0	6.33E-04	59	21.8	0.00E+00	30.0001	0	0	0	0.00E+00	1.06E-38	37.7664
42.3746	DIV0	0	7.10E-04	90	21.8	0.00E+00	30.0001	0	0	0	0.00E+00	1.06E-38	42.3746
47.5451	1.55E+06	3.07E-05	7.97E-04	120	21.8	7.24E-02	30.0001	0.03246	2.93E-05	65671.1	0.00E+00	1.06E-38	47.5451
53.3465	1.73E+06	3.08E-05	8.94E-04	150	21.8	7.24E-02	30.0001	0.03209	2.93E-05	73684.2	0.00E+00	1.06E-38	53.3465
59.8557	1.70E+06	3.53E-05	0.00113	180	21.8	7.24E-02	30.0001	0.03755	2.93E-05	82675	0.00E+00	1.06E-38	59.8557
67.1592	1.66E+06	4.06E-05	0.00126	210	21.8	8.27E-02	30.0001	0.03962	3.35E-05	81167.5	0.00E+00	1.06E-38	67.1592
75.3539	1.18E+06	6.36E-05	0.00142	241	21.8	8.27E-02	30.0001	0.06758	3.35E-05	91071.4	0.00E+00	1.06E-38	75.3539
84.5485	1.23E+06	6.85E-05	0.00159	271	21.8	9.31E-02	30.0001	0.06758	3.77E-05	90830.1	0.00E+00	1.06E-38	84.5485
94.865	2.90E+06	3.27E-05	0.00178	301	21.8	1.24E-01	30.0001	0.08709	5.03E-05	76434.8	0.00E+00	1.06E-38	94.865
106.44	1.82E+06	5.84E-05	0.00178	330	21.8	1.24E-01	30.0001	0.1288	5.03E-05	85761.2	0.00E+00	1.06E-38	106.44
119.428	2.77E+06	4.30E-05	0.002	360	21.8	1.97E-01	30.0001	0.01397	7.96E-05	60774.1	0.00E+00	1.06E-38	119.428
134	2.67E+06	5.02E-05	0.00225	391	21.8	2.48E-01	30.0001	0.00372	1.01E-04	53983.5	0.00E+00	1.06E-38	134
150.351	2.54E+06	5.91E-05	0.00252	421	21.8	2.59E-01	30.0001	0.01432	1.05E-04	58147.7	0.00E+00	1.06E-38	150.351
168.696	2.52E+06	6.70E-05	0.00283	451	21.8	3.62E-01	30.0001	0.00961	1.47E-04	46602	0.00E+00	0	168.696
189.28	2.49E+06	7.60E-05	0.00317	481	21.8	4.34E-01	30.0001	0.01458	1.76E-04	43573.6	0.00E+00	0	189.28
212.376	1.89E+06	1.12E-04	0.00356	511	21.8	5.90E-01	30.0001	0.01287	2.39E-04	36024.5	0.00E+00	0	212.376
238.29	1.29E+06	1.84E-04	0.00399	542	21.8	9.72E-01	30.0001	0.01109	3.94E-04	24510.1	0.00E+00	0	238.29
267.366	4.43E+05	6.03E-04	0.00448	572	21.8	2.93E+00	30.0001	6.38E-07	0.00119	9134.52	0.00E+00	0	267.366
299.989	9453.04	0.03173	0.00503	602	21.8	5.30E+01	30.0001	0.03555	0.02181	557.144	0.00E+00	0	299.989
336.585	207.715	1.62042	0.00564	632	21.8	2.14E+03	30.0001	0.02396	0.06562	15.7479	0.00E+00	0	336.585

TABLE 3

Tomato Triple Concentrate

Stress Pa	Ela Pa-s	Rate s-1	Torque N-m	time s	Temp °C	Strain(t) %	SS Time s	SS Slope	theta rad	Position	N1 Pa	NormalForce N
4.99982	DIV0	0.00E+00	8.38E-05	0	0	20	0.00E+00	30.0001	0	0	1	0
5.60989	DIV0	0.00E+00	9.40E-05	29	29	20	0.00E+00	30.0001	0	0	1	0
6.2944	DIV0	0.00E+00	1.05E-04	60	60	20	0.00E+00	30.0001	0	0	1	0
7.06244	DIV0	0.00E+00	1.10E-04	90	90	20	0.00E+00	30.0001	0	0	1	0
7.92418	DIV0	0.00E+00	1.33E-04	121	121	20	0.00E+00	30.0001	0	0	1	0
8.89108	DIV0	0.00E+00	1.49E-04	151	151	20	0.00E+00	30.0001	0	0	1	0
9.97595	DIV0	0.00E+00	1.67E-04	180	180	20	0.00E+00	30.0001	0	0	1	0
11.1932	DIV0	0.00E+00	1.88E-04	211	211	20	0.00E+00	30.0001	0	0	1	0
12.559	DIV0	0.00E+00	2.10E-04	241	241	20	0.00E+00	30.0001	0	0	1	0
14.0914	DIV0	0.00E+00	2.36E-04	272	272	20	0.00E+00	30.0001	0	0	1	0
15.8108	DIV0	0.00E+00	2.65E-04	302	302	20	0.00E+00	30.0001	0	0	1	0
17.74	DIV0	0.00E+00	2.97E-04	331	331	20	0.00E+00	30.0001	0	0	1	0
19.9046	DIV0	0.00E+00	3.34E-04	362	362	20	0.00E+00	30.0001	0	0	1	0
22.3334	DIV0	0.00E+00	3.74E-04	392	392	20	0.00E+00	30.0001	0	0	1	0
25.0585	DIV0	0.00E+00	4.20E-04	423	423	20	0.00E+00	30.0001	0	0	1	0
28.1161	DIV0	0.00E+00	4.71E-04	452	452	20	0.00E+00	30.0001	0	0	1	0
31.5467	DIV0	0.00E+00	5.29E-04	482	482	20	0.00E+00	30.0001	0	0	1	0
35.396	DIV0	0.00E+00	5.93E-04	513	513	20	0.00E+00	30.0001	0	0	1	0
39.715	9.61E+05	4.13E-05	6.65E-04	543	543	20	7.24E-02	30.0001	0.04596	2.93E-05	1	0
44.561	8.63E+05	5.16E-05	7.47E-04	574	574	19.99	7.24E-02	30.0001	0.05922	2.93E-05	1	0
49.9902	7.72E+05	6.48E-05	8.38E-04	603	603	20	8.27E-02	30.0001	0.06921	3.35E-05	1	0
56.0989	1.53E+06	3.66E-05	9.40E-04	633	633	20	1.14E-01	30.0001	0.09517	4.61E-05	1	0
62.944	1.48E+06	4.25E-05	0.00105	664	664	20	1.24E-01	30.0001	0.10568	5.03E-05	1	0
70.6244	1.67E+06	4.22E-05	0.00118	694	694	20	1.55E-01	30.0001	0.01448	6.28E-05	1	0
79.2418	1.08E+06	4.21E-05	0.00133	725	725	20	2.07E-01	30.0001	0.01343	8.38E-05	1	0
88.9108	1.65E+06	5.38E-05	0.00149	754	754	20	2.38E-01	30.0001	0.0129	9.63E-05	1	0
99.7596	1.90E+06	5.25E-05	0.00167	784	784	20	2.90E-01	30.0001	0.01318	1.17E-04	1	0
111.932	1.61E+06	6.96E-05	0.00188	815	815	20	3.52E-01	30.0001	0.0119	1.42E-04	1	0
125.59	1.65E+06	7.60E-05	0.0021	845	845	20	4.65E-01	30.0001	0.01458	1.89E-04	1	0
140.914	1.54E+06	9.15E-05	0.00236	876	876	20	5.27E-01	30.0001	0.00889	2.14E-04	1	0

Cont. TABLE 3

150.108	1.46E+06	1.08E-04	0.00265	905	20	6.41E-01	30.0001	0.00864	2.60E-04	1	0	0
177.4	1.27E+06	1.40E-04	0.00297	935	20	8.69E-01	30.0001	0.00674	3.52E-04	1	0	0
199.046	7.47E+05	2.67E-04	0.00334	966	20	1.29E+00	30.0001	0.01028	5.24E-04	1	0	0
223.334	60604.3	3.68E-03	0.00374	996	20	8.01E+00	30.0001	0.03402	0.00324	1	0	0
250.565	6802.51	3.68E-02	0.0042	1026	20	9.24E+01	30.0001	0.01109	0.03744	1	0	0
281.161	2621.09	1.07E-01	0.00471	1057	20	2.93E+02	30.0001	0.00241	0.11004	0	0	0
315.467	1278.63	2.47E-01	0.00529	1087	20	6.66E+02	30.0001	0.00264	0.26955	48	0	0
353.96	619.997	5.71E-01	0.00593	1116	20	1.48E+03	30.0001	0.0046	0.59012	43	0	0
397.149	337.724	1.18E+00	0.00665	1146	20	3.06E+03	30.0001	0.00524	1.24068	33	0	0
445.605	167.326	2.66E+00	0.00747	1177	20	6.24E+03	30.0001	0.0074	2.52762	12	0	0
498.384	1.01203	4.92E+02	0.00835	1207	20	5.00E+05	30.0001	0.01680	205.936	48	0	0

TABLE 4

DC test 1

Stress Pa	Ela Pa-s	Rate s-1	Torque N-m	Time s	Temp °C	Strain(t) %	SS Time s	SS Slope	theta rad	G' Pa	G'' Pa	Position	stress(f) Pa
49,9982	7,53E+05	6,64E-05	8,38E-04	0	21,8	8,48E-01	30,0001	0,0197	3,43E-04	5095,32	0,00E+00	2	49,9982
56,0989	1,09E+06	5,14E-05	9,40E-04	29	21,8	1,86E-01	30,0001	0,00955	7,54E-05	30133,4	0,00E+00	2	56,0989
62,944	1,18E+06	5,34E-05	0,00105	59	21,8	2,07E-01	30,0001	0,00917	8,38E-05	30429,2	0,00E+00	2	62,944
70,6244	8,48E+05	8,33E-05	0,00118	90	21,8	2,38E-01	30,0001	0,06719	9,63E-05	29688,8	0,00E+00	2	70,6244
79,2418	1,33E+06	5,94E-05	0,00133	120	21,8	2,38E-01	30,0001	0,0172	9,63E-05	33311,4	0,00E+00	2	79,2418
88,9108	1,32E+06	6,75E-05	0,00149	150	21,8	3,00E-01	30,0001	0,00631	1,21E-04	29643,1	0,00E+00	2	88,9108
99,7596	1,18E+06	8,46E-05	0,00167	180	21,8	4,03E-01	30,0001	0,00977	1,63E-04	24731,8	0,00E+00	2	99,7596
111,932	9,06E+05	1,24E-04	0,00188	210	21,8	5,07E-01	30,0001	0,01481	2,05E-04	22086,4	0,00E+00	2	111,932
125,59	9,29E+05	1,35E-04	0,0021	241	21,8	7,24E-01	30,0001	0,0061	2,93E-04	17346,9	0,00E+00	2	125,59
140,914	5,45E+05	2,59E-04	0,00236	271	21,8	1,15E+00	30,0001	0,0408	4,65E-04	12274,3	0,00E+00	2	140,914
150,108	2,80E+05	5,65E-04	0,00265	301	21,8	2,40E+00	30,0001	0,06567	9,72E-04	6589,2	0,00E+00	2	150,108
177,4	50308,2	0,00304	0,00297	331	21,8	8,89E+00	30,0001	0,02847	0,0036	1994,45	0,00E+00	2	177,4
199,046	5094,7	0,03907	0,00334	360	21,8	7,95E+01	30,0001	0,01121	0,03222	250,229	0,00E+00	1	199,046
223,334	1455,9	0,1534	0,00374	391	21,8	3,72E+02	30,0001	0,00394	0,15084	59,965	0,00E+00	0	223,334
250,585	711,847	0,35202	0,0042	421	21,8	9,31E+02	30,0001	0,00166	0,37721	26,9047	0,00E+00	47	250,585
281,16	378,474	0,74288	0,00471	451	21,8	1,89E+03	30,0001	0,00522	0,76659	14,8541	0,00E+00	41	281,16
315,463	166,641	1,89307	0,00529	481	21,8	4,52E+03	30,0001	0,01059	1,8305	6,97965	0,00E+00	26	315,463
336,054	0,87151	385,61	0,00563	511	21,8	9,24E+04	30,0001	0,22919	37,4415	0,36352	0,00E+00	38	336,064

TABLE 5

C tent 1

Stress Pa	Ela Pa-s	Rate s-1	Torque N-m	time s	Temp °C	Strain(t) %	SS Time s	SS Slope	theta rad	G' Pa	G'' Pa	Position	stress(t) Pa
9,99064	1,79E+05	5,58E-05	1,68E-04	0	21,8	6,02E-01	30,0001	0,02358	2,60E-04	1510,67	0,00E+00	28	9,99064
11,2198	3,30E+05	3,32E-05	1,88E-04	30	21,8	1,14E-01	30,0001	0,07678	4,61E-05	9861,85	0,00E+00	28	11,2198
12,5088	1,29E+05	9,76E-05	2,11E-04	60	21,8	1,55E-01	30,0001	0,0604	6,28E-05	8114,46	0,00E+00	28	12,5088
14,1249	3,54E+05	3,99E-05	2,37E-04	91	21,8	1,24E-01	30,0001	0,11779	5,03E-05	11380,7	0,00E+00	28	14,1249
15,8484	4,36E+05	3,63E-05	2,66E-04	121	21,8	1,55E-01	30,0001	0,01298	6,28E-05	10215,5	0,00E+00	28	15,8484
17,7822	2,96E+05	6,02E-05	2,98E-04	151	21,8	1,76E-01	30,0001	0,0277	7,12E-05	10113,5	0,00E+00	28	17,7822
19,9519	3,52E+05	5,67E-05	3,34E-04	181	21,8	2,07E-01	30,0001	0,02512	8,30E-05	9645,41	0,00E+00	28	19,9519
22,3864	3,66E+05	6,12E-05	3,75E-04	211	21,8	3,21E-01	30,0001	0,00972	1,30E-04	6982,15	0,00E+00	28	22,3864
25,118	2,41E+05	1,04E-04	4,21E-04	241	21,8	5,07E-01	30,0001	0,00409	2,05E-04	4956,27	0,00E+00	28	25,118
28,1828	59065	4,71E-04	4,72E-04	271	21,8	2,20E+00	30,0001	0,11241	8,92E-04	1279,3	0,00E+00	28	28,1828
31,6217	26718,5	0,00118	5,30E-04	301	21,8	4,78E+00	30,0001	0,03646	0,00194	661,773	0,00E+00	28	31,6217
35,4802	1395,92	0,02542	5,94E-04	331	21,8	5,19E+01	30,0001	0,01758	0,02104	68,3086	0,00E+00	28	35,4802
39,8091	333,057	0,11953	6,67E-04	361	21,8	2,98E+02	30,0001	0,00875	0,12062	13,366	0,00E+00	27	39,8091
44,6664	136,674	0,32681	7,48E-04	392	21,8	8,57E+02	30,0001	0,00489	0,34692	5,21437	0,00E+00	24	44,6664
50,1159	68,4756	0,73188	8,40E-04	422	21,8	1,91E+03	30,0001	0,00837	0,77453	2,62055	0,00E+00	18	50,1159
56,2312	36,277	1,55005	9,42E-04	452	21,8	3,94E+03	30,0001	0,00335	1,59554	0,79011	0,00E+00	5	56,2312
63,0904	19,9316	3,16534	0,00106	482	21,8	7,99E+03	30,0001	0,00483	3,23394	0,79011	0,00E+00	28	63,0904
70,7595	7,84429	9,02051	0,00119	512	21,8	1,99E+04	30,0001	0,01829	8,04345	0,35829	0,00E+00	12	70,7595
79,3275	2,13192	37,2094	0,00133	543	21,8	7,17E+04	30,0001	0,01495	29,0404	0,11063	0,00E+00	21	79,3275
89,2037	1,09677	81,3328	0,00149	573	21,8	2,22E+05	30,0001	0,01263	90,0674	0,04011	0,00E+00	31	89,2037
100,243	0,69726	143,767	0,00168	602	21,8	4,08E+05	30,0001	0,01538	165,166	0,02458	0,00E+00	26	100,243
112,38	0,4534	247,861	0,00188	632	21,8	6,70E+05	30,0001	0,00514	271,461	0,01677	0,00E+00	47	112,38
126,18	0,33558	376,004	0,00211	663	21,8	1,07E+06	30,0001	0,00542	433,814	0,01178	0,00E+00	33	126,18
141,308	0,2491	567,203	0,00237	693	21,8	1,65E+06	30,0001	0,00337	669,478	0,00855	0,00E+00	31	141,308
158,346	0,19264	821,993	0,00265	723	21,8	2,35E+06	30,0001	0,0017	953,198	0,00673	0,00E+00	38	158,346
177,42	0,16473	1077,01	0,00297	754	21,8	3,19E+06	30,0001	0,00268	1293,01	0,00556	0,00E+00	4	177,42
199,079	0,1302	1440,49	0,00334	784	21,8	4,11E+06	30,0001	0,00196	1664,01	0,00485	0,00E+00	3	199,079
223,337	0,11941	1870,29	0,00374	814	21,8	5,20E+06	30,0001	0,00135	2138,97	0,00423	0,00E+00	29	223,337
251,339	0,11326	2219,04	0,00421	845	21,8	6,74E+06	30,0001	3,04E-04	2729,09	0,00373	0,00E+00	34	251,339
282,139	0,10672	2643,73	0,00473	875	21,8	7,78E+06	30,0001	5,49E-04	3152,5	0,00362	0,00E+00	31	282,139
315,874	0,09486	3329,83	0,00529	905	21,8	9,40E+06	30,0001	5,93E-04	3840,24	0,00333	0,00E+00	45	315,874

TABLE 6

Stress Pa	Ela Pa-e	Rate s-1	Torque N-m	Time s	Temp °C	Strain(t) %	SS Time s	SS Slope	thia rd	Position	N1 Pa	Normal Force N
0.56090	34728.3	6.386E-06	7.05E-06	30	20	0.0065007	30	0.01035	2.79253E-06	31	0	0
0.07044	#DIV/0!	0	7.91E-06	60	20	0	30	0	0	31	0	0
0.70634	71410.7	8.586E-06	8.878E-06	90	20	0.0027653	30	0.0148433	1.39827E-06	31	0	0
0.7024367	21568.35	3.423E-06	9.058E-06	121	20	0.0279057	30	0.00843	1.30627E-05	31	0	0
0.8001087	19586.35	3.070E-06	1.117E-05	151	20	0.0111757	30	0.1018433	6.58507E-06	31	0	0
0.9076	#DIV/0!	0	1.254E-05	181	20	0	30	0	0	31	0	0
1.11932	#DIV/0!	0	1.407E-05	211	20	0	30	0	0	31	0	0
1.2558033	6142.9	8.616E-06	1.578E-05	241	20	0.0139027	30	0.0882033	8.08133E-06	31	0	0
1.40914	26574.6	1.044E-05	1.771E-05	271	20	0.0111150	30	0.0193433	0.000005685	31	0	0
1.56108	#DIV/0!	0	1.987E-05	302	20	0	30	0	0	31	0	0
1.774	#DIV/0!	0	2.229E-06	332	20	0	30	0	0	31	0	0
1.9004007	14786	4.487E-05	2.501E-06	362	20	0.04103	30	0.0806367	0.000020844	31	0	0
2.23334	80285.6	1.871E-05	2.867E-05	392	20	0.0363223	30	0.0232607	1.81517E-06	31	0	0
2.50505	87916.3	2.850E-05	3.140E-05	423	20	0.050043	30	0.0361333	0.000029322	31	0	0
2.81101	06932.2	4.220E-05	3.433E-05	453	20	0.087021	30	0.0512333	0.00003351	31	0	0
3.15407	07012.767	3.776E-05	3.684E-05	483	20	0.083776	30	0.06326	0.000041886	31	0	0
3.5396	124813.33	2.851E-05	4.448E-05	513	20	0.1117133	30	0.00138	5.58503E-05	31	0	0
3.0716	88556.1	5.714E-05	4.901E-05	543	20	0.1368333	30	0.04377	0.000068417	31	0	0
4.6800867	101708.83	4.020E-05	5.0E-05	573	20	0.1703567	30	0.02561	8.51717E-06	31	0	0
4.90082	98101.133	5.130E-05	0.283E-05	604	20	0.2178267	30	0.0080107	0.00010891	31	0	0
6.00980	81155.967	6.059E-05	7.05E-06	634	20	0.20205	30	0.0140378	0.000111023	31	0	0
6.2044	61487.067	0.0001024	7.91E-05	664	20	0.4210833	30	0.0127087	0.000210837	31	0	0
7.00244	57475.233	0.0001249	8.875E-05	694	20	0.7511367	30	0.0355933	0.000375897	31	0	0
7.92418	34778.807	0.0002348	9.080E-05	725	20	1.0000967	30	0.0291167	0.000504053	31	0	0
8.0910033	21750.2	0.0004212	0.0001117	755	20	1.7000333	30	0.0453267	0.000895003	31	0	0
9.0780233	12228.87	0.000800	0.0001254	785	20	3.0030667	30	0.2000367	0.001053333	31	0	0
11.193213	5367.07	0.0021313	0.0001407	816	20	9.6960333	30	0.1100067	0.0048	31	0	0
12.558807	500.45267	0.0280107	0.0001678	845	20	01.35333	30	0.0287367	0.030073333	31	0	0
14.001233	111.56037	0.1260233	0.0001771	875	20	315.60333	30	0.0053167	0.157633333	30	0	0
15.610567	56.591267	0.2864033	0.0001967	905	20	767.76	30	0.0000267	0.3830	43	0	0
17.7397	35.640233	0.5004367	0.0002229	930	20	1404.8	30	0.0043007	0.702420667	37	0	0
18.904	24.73033	0.82164	0.0002501	966	20	2317.7333	30	0.00374	1.168883333	28	0	0
22.3332	17.133133	1.3036333	0.0002806	996	20	3600.0333	30	0.0046233	1.84951	13	0	0
26.057667	12.1413	2.0005	0.0003148	1027	20	5630.7333	30	0.0032007	2.916300667	39	0	0
28.116	8.8815333	3.1700	0.0003533	1057	20	0000.9	30	0.0028333	4.50031	19	0	0
31.6400	6.5347467	4.8012333	0.0003904	1087	20	13010	30	0.00463	0.95467	28	0	0
36.303	4.7740233	7.4040807	0.0004448	1118	20	21332	30	0.0020567	10.06500067	24	0	0
50.7122	3.2612267	12.467067	0.000400	1146	20	34330.333	30	0.00643	17.100	33	0	0
44.630087	1.0027033	23.437333	0.0005500	1177	20	80407	30	0.01064	30.74526907	18	0	0

Table 7

Test of the seasoning power and organoleptic properties on the invention products Ro1 and Ro2 and on commercial tomato products: triple concentrate, double concentrate, concentrate and pulped tomatoes.			
Product	Condiment attached to the pasta (g)	Seasoning power	Organoleptic properties (taste, smell)
Ro2 (Ex. 1)	88.0	8.8	delicate taste of fresh tomato, fresh tomato smell
Ro1 (Ex. 2)	97.8	9.8	very good taste and fresh tomato smell
triple concentrate (TC)	70.0	7	caramel, bitter taste, the tomato is not recognized; cooking ("cotto") smell
double concentrate (DC)	65.0	6.5	caramel taste, the tomato is not recognized; cooking ("cotto") smell.
concentrate (C)	62.0	6.2	very sweet taste, the tomato is not recognized; tomato smell
pulped tomatoes	40.0	4	boiled pasta taste, very light tomato smell

## CLAIMS

- (VV 2676/254, CA)



6. Compositions according to claims 4-5 wherein the amount of fats and/or oil in the composition ranges from 10% to 25% by weight referred to the weight of the starting tomato product; the amount of soft-grain cheeses which can be englobed ranges from 50% to 300% by weight, the amount of hard-grain and grated cheeses which can be englobed ranges from 10% to 25% by weight.
7. Use of the compositions of claims 1-6 to season foods, in particular pasta, meat, fish, vegetables.
8. Use of the compositions of claim 7 comprising usual ingredients of the products for food use, preferably essence aromas, preservatives.
9. Use of the compositions according to claims 1-6 as foods.
10. Foods according to claim 9.
11. A process to obtain the compositions of claims 1-3, wherein a grid separator is used, comprising:
  - one or more walls constituted by stainless steel grids having opening not greater than 0.5 mm, preferably from 0.05 mm to 0.3 mm,
  - a device for the mechanical stirring, preferably from 5 rpm to 20 rpm, said device being such that the solid is conveyed in the separator central zone, in said process the separator is charged with the tomato juice treated to inactivate the enzymes, and by operating

under sterile conditions, at temperatures generally in the range 5°C-15°C and at atmospheric pressure, or using pressures slightly higher than that atmospheric, from 760 mm Hg (0.101 MPa) up to 900 mm Hg (0.120 MPa) or by applying pressures slightly lower than the atmospheric pressure, down to 450 mm Hg (0.06 MPa), stirring is maintained until in the separator there is a compact mass which does not separate tomato juice serum any longer.

12. A process to obtain the compositions of claims 1-3 wherein a concave- or flat-shaped sieve, having meshes with opening not greater than 0.5 mm, for example from 0.05 to 0.3 mm is used, wherein the tomato juice treated to inactivate the enzymatic systems is put, and operating under sterile conditions, at temperatures generally in the range 5°C-15°C and at atmospheric pressure; the mass (sieve) is kept under oscillation or vibration, until a compact mass forms, which does not separate any longer the serum.
13. A process to obtain the compositions of claims 1-3, wherein an equipment constituted by a stainless steel for food use grid cylinder is utilized, having an opening not greater than 0.5 mm, preferably from 0.05 mm to 0.3 mm, said cylinder having inside an Archimedean screw rotating at an angular speed of 20-40 rpm, said process being

preferably carried out under the temperature and pressure conditions described in claim 11.

14. A process according to claims 11-13 wherein the tomato products have a content of insoluble solids in the dry residue in the range 40-70%.

15. A process according to claim 14 wherein to the tomato products having a content of insoluble solids in the dry residue in the range 40-70%, lyophilized or cryoconcentrated serum is added to obtain tomato products having a lower content of insoluble solids in the dry residue, preferably in the range 18-40%.